

STAFF SUMMARY SHEET

	TO	ACTION	SIGNATURE (Surname), GRADE AND DATE		TO	ACTION	SIGNATURE (Surname), GRADE AND DATE
1	DFPY	sig	(sig) <i>Cook, D-B, 22 JUNE 14</i> (Department Head or Designee)	6			
2	DFER	approve	<i>SOLTI, AD-22, 30 Jun 14</i>	7			
3	DFPY	action		8			
			(Author /Originator)				
4				9			
5				10			
SURNAME OF ACTION OFFICER AND GRADE			SYMBOL	PHONE		TYPIST'S INITIALS	SUSPENSE DATE
Jensen, AD-23			DFPY	333-8666			Not Applicable
SUBJECT Clearance for Material for Public Release			USAFA-DF-PA- <i>376</i>			DATE	20140627

SUMMARY

1. PURPOSE. To provide security and policy review on the document at Tab 1 prior to release to the public.

2. BACKGROUND.

Authors: Mark N. Jensen

Title: Aristotle, Autonomy, and Design

Circle one: Presentation

Description: In this presentation, I present an alternative to the Enlightenment account of autonomy. The neo-Aristotelian account of autonomy that I develop has implications for the architecture and design of individual housing units that run counter to our current practices. On the basis of my critique, I sketch changes to our current practices that would better achieve the Aristotelian vision.

Release Information: International Conference of the International Society for the Philosophy of Architecture

Previous Clearance information: N/A

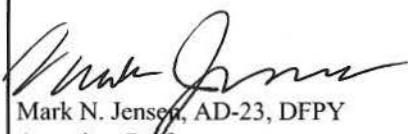
Recommended Distribution Statement:

(Distribution A, Approved for public release, distribution unlimited.)

3. DISCUSSION.

4. VIEWS OF OTHERS.

5. RECOMMENDATION. Department Head or designee reviews as subject matter expert. DFER reviews for policy and security. Coordination indicates the document is suitable for public release. Suitability is based on the document being unclassified, not jeopardizing DoD interests, and accurately portraying official policy [Reference DoDD 5230.09]. Release is the decision of the originator (author). Compliance with AFI 35-102 is mandatory.



Mark N. Jensen, AD-23, DFPY
Associate Professor

1 Tabs
1. "Aristotle, Autonomy, and Design"
2

Aristotle, Autonomy, and Design

Mark Jensen, United States Air Force Academy

Autonomy, in the Western Enlightenment tradition, is the condition of self-governance. The autonomous person is ruled by her reason. In this way, she is free of both the internal impositions of passion and appetite and the external impositions of the pretensions authority and the coercive force of others. Autonomy, understood in this way, lies at the heart of the liberal tradition of Western individualism. It is the only legitimate basis for political authority. It is the proper achievement of mature people in mature societies. Autonomous people are free in the right way. With their correlative respect for the autonomy of others, they are reasonable, democratic, tolerant, and just.

Now despite its many virtues--especially in the political realm--the Enlightenment account of autonomy strikes many of us as too thin. In the first place, there is little explanation for how it is that we as individuals and groups achieve autonomy. Apart from notable outliers such as Locke's discussion in *Some Thoughts Concerning Education* and Mill's reflections in his *Autobiography*, little attention is paid to the specific task cultivating autonomous people. In the tradition, mature, autonomous citizens are simply taken as given. The problem here is of course that real people are not like this. We were children once; we are adults now (one hopes); and we will be senior citizens later. Unless the achievement of autonomy is a natural occurrence for human beings in the course of their lives—a view that most philosophers reject—we will need institutions and programs designed to cultivate it and reinforce it over time. Human life is a succession of stages with different challenges, standards, and requirements for freedom in each stage.

In the second place, the account of autonomy, especially in its Kantian and neo-Kantian versions, is tied to a narrow account of moral reasoning. For Kant, the sole criterion for making a moral judgment is an evaluation of the consistency of a proposed maxim according to the categorical imperative test. In my view, highly abstract and instrumentalist approaches to moral judgment, such as this one, are incomplete. (Here I'm in league with revived versions of

utilitarianism and virtue theory in regarding reason as incomplete by itself.) Moral judgment, in my opinion, requires a pre-deliberative canon of norms, including, for example, ideals, functional descriptions, principles, practices, and habits. To be sure: I'm not defending, at this point, a particular account of the pre-deliberative canon. In fact, I'm persuaded by Alasdair MacIntyre that the canon should not be regarded as fixed in stone: its liveliness in our moral faculties is dependent (in part) on the health of an extended argument over its nature and content. My point here is instead that the content of the good life, marked by excellent moral judgment, cannot be determined on the basis of an impartial rational procedure alone. To paraphrase Kant, freedom without content is empty.

In the third place, the Enlightenment fetish for representational epistemology and its consequent skepticism—prevalent especially in Hume—yields an excessively narrow account of the scope of knowledge and the extent of our direct contact with the world outside us, including our social world. To be sure: representational epistemologies are still quite popular and one version may in fact be correct. But it seems to me that any skeptical approach to epistemology must confront two contemporary challenges. The first is the explosion of theoretical and applied science in the 20th century. For a people who are supposed to have no direct contact with the noumenal world and for whom induction is an invalid form of inference, we seem to know a lot more about the physical world than we ever have before. Evidence for this can be found in the explosive expansion of the applied sciences even in our own adult lives—check your pocket for a personal example. The second challenge is the revival of intellectually respectable religious perspectives. The 20th century sociological prediction that religion would fade from view is demonstrably false. For all their efforts, totalitarian and tyrannical regimes in the 20th century were unable to eliminate religious belief and practice from their peoples. At the same time, contemporary social and political philosophers in the West, including John Rawls and Jürgen Habermas, have resigned themselves to the fact that, under conditions of democratic pluralism and freedom of expression, religious belief and religious practice will persist and require accommodation by neutral social and political institutions.

The implication of these three concerns, it seems to me, is that our account of autonomy, that is to say, human freedom, must be more complex than those in the Enlightenment tradition would have us believe. So far, I've said little about architecture. Nevertheless, my focus today is on the important connection between a more robust account of human freedom and contemporary design and building practices—especially as they concern our principal living spaces or dwellings. I will defend three claims. First, I will fill out in more detail an approach to human freedom filled with complexities that should be part of the account, given the critique above. It turns out that my approach reflects central themes in Aristotle's moral, social, political, and architectural thought. Drawing on this account of autonomy, I will sketch a broadly Aristotelian approach to dwelling and city design. Second, I will argue that our contemporary social and cultural practices with respect to design are largely inconsistent with this account of freedom. The places where we live, work, and play are rarely as conducive to human freedom as they could be and as they should be. Finally, while the problems here are not easy to solve, I will argue that some of our new technologies and practices in design have the potential to transform the culture of design and construction and in this way enable many more of us to achieve the kind of attractive Aristotelian ideal that I will describe here than we have ever accomplished before.

Before I begin the argument, let me note one important point of agreement between Enlightenment thinkers, Aristotle, and myself as to the nature of autonomy or human freedom. Freedom, of the sort that matters to us, is condition that human beings achieve when things are going right for us. In this way, freedom is not a necessary or a given characteristic of the human condition; it is instead something that we must figure out how to get for others and ourselves. In other words, freedom is among those conditions that people and peoples should be intentionally working to establish. With this in mind, let us turn to Aristotle.

I. Themes in Aristotle

As many of you are aware, Aristotle was wrong on a number of facts that make it impossible to wholly adopt his perspective. His views on gender and race, for example, do not stand up to

modern scrutiny. However, the conceptual and normative framework for his anthropological, social, and political analysis can be divorced from his mistakes with respect to the facts. We will focus here on three specific aspects of this framework: (i) his account of the fundamental unit of human life, (ii) his account of the good life in community, and (iii) the way his focus on moderation colors his approach to architecture. These three elements will give us tools sufficient to sketch an Aristotelian approach to home design and to support a critique of architecture—especially home design and construction practices.

1.1 The Fundamental Unit of Human Life

The concept of the “fundamental unit of human life,” is the concept of the proper starting point for an investigation into the human species, from the perspective of philosophical anthropology. Finding this fundamental unit requires some care: we can err too small by focusing on a component and err to big by focusing on an aggregate. Aristotle regards the household as the fundamental unit of human life and identifies its elements with a quote from Hesiod: “a house, a wife, and an ox for the plow” (*Politics*, 1252b10). More generally, let’s label these elements (i) one’s dwelling, (2) one’s intimate relationships, and (iii) one’s tools for one’s work.¹

We should notice immediately the contrast between Aristotle’s starting point and that of the Enlightenment and modernity. Aristotle does not begin with the abstract rational individual. We begin instead with a person in context—especially a local context of places, people, and work. The Enlightenment approach that begins with the bare individual is bound to fail in the same way that the biologist is bound to fail who attempts to make sense of the ant by starting the investigation with a single ant confined to a specimen jar.

¹ Notice that I’ve framed my discussion of our dwellings, relationships, and work as abstract types, rather than specific tokens. In Aristotle’s *Politics*, the specific tokens include a patriarchal marriage, and slaves (human tools) if you have the money for them. But as I said at the outset, there is nothing about the theory that requires these particular tokens. We can accept the view that our thinking about human anthropology begins with dwellings, relationships, and work without being required to accept his specific account the household.

Aristotle's more inclusive starting point has implications for our account of human freedom. First, human freedom will make no sense when all we have in view is the abstract individual. If we accept Aristotle's starting point for understanding human beings, then an understanding of human freedom must begin with these three elements. One natural approach would be to argue that the degree to which one achieves human freedom will depend on the degree to which one achieves success appropriate to one's dwelling, relationships, and work. This is surely right. In order to be free to pursue the good life (or at least my specific vision of the good life), I require at least some minimum degree of achievement with respect to these three elements. For example, as a physical being, I require shelter from the elements in the world that threaten my body. As a developmental being, I require relationships with more mature people to help me grow. And as a dependent being, I need avenues through which I can work to meet my unmet needs. Together, it seems right to say that the degree to which I am free depends in part on the degree to which I have found success in building a dwelling, establishing a social network, and finding meaningful work. Contrapositively, to the extent that these three tasks are challenges for me, my freedom is constrained in my life is characterized by servitude.

This particular insight is not especially profound; we might regard it as a philosophical adaptation of Maslow's hierarchy of needs. However, it seems to me that the relationship between these three elements of basic human life and human freedom is more complex. It is also the case that human freedom, at least to some degree, is necessary in order to achieve a degree of success in these three elements. In other words, these elements, together with human freedom, are symbiotically related. For example, in order to secure a dwelling that will enable my family to flourish, I require successful work. And in order to secure successful work, I require a secure dwelling in which or from which to do it. And both of these observations presuppose that I can make choices with respect to my dwelling and my work that are free from the internal and external constraints that would keep me from making reasoned choices that reflect my own moral, philosophical, or religious account of the good life in the context of my community. At the same time, acquiring a secure dwelling through which I can contribute to meaningful relationships and

carry out successful work enables the leisure to reflect on my own comprehensive views in such a way that they can then more richly inform my judgments.

We can conclude then that the Aristotelian account of autonomy begins holistically and *in situ*. To be a human being is to be located in a place, intimately connected to others, and involved in some kind of activity. Rational self-governance, or human freedom, both requires and enables success with respect to these basic elements of human life.

1.2 The Good in Community

While Aristotle regards the household as the fundamental unit of human life, he does not regard it as the complete focus of an investigation into human affairs. By itself, a household is not self-sufficient. On his view, households are naturally organized into villages and a group of villages together constitutes a city. Only when we build a city do we achieve a self-sufficient human community, and, in turn, the proper focus for a comprehensive investigation. In other words, to understand and then evaluate human affairs, we cannot but make reference to the city. Villages, households, and citizens are all constituents of a city in their own fashion; their lives and activities cannot be understood without reference to the city.

Now to say that a city is constituted by its citizens is not to say that a city is simply composed of citizens. If that were so, the good of the city could be measured purely in terms of the individual success and failures of its citizens. The good for the city is a common good. It is achieved when each of the citizens in the city performs his or her specific function well. Consider his claim about the chief good at the beginning of the *Nicomachean Ethics*:

And since it [political science] uses the other sciences concerned with action, and moreover legislates what must be done and what avoided, its end will include the ends of the other sciences, and so this will be the human good. For even if the good

is the same for a city as for an individual, still the good of the city is apparently a greater and more complete good to acquire and preserve.²

As Aristotle will explain in more detail, the function of the citizen is given not only in terms of her function in the context of the fundamental unit. Citizens' also have functions attached to their role in the village, and in turn, their roles in the city. (Cf. *Politics*, 1329a2ff.) In Aristotle's ideal constitution, the government assigns these roles according to citizens' stages and capabilities. It seems to me that we need not follow him in assigning these roles involuntarily, but we must follow him in recognizing that the moral obligations associated with excellent citizenship extend beyond one's obligations in the household.

We must take care in describing the relationship between the household and the city much the same way as we took care in describing the relationship between the constituent elements of the household and the freedom of the individual. The flourishing city is certainly one in which all of the households are flourishing as well. But it does not follow that a city of flourishing households is sufficient to secure the flourishing of the city. In other words, the success of individual households in achieving success in their private goods does not guarantee the achievement of all of the common and public goods associated with the flourishing city. Insofar as citizens' identify with the good not only of their household but also of their city, citizens' pursuits will include a range of private, public, and common goods. As always, the starting point for these pursuits will be citizens' dwellings, relationships, and work activities. As a result, our final account of these elements must be further tailored to suit these further goods that they both require and enable.

1.3 The Golden Mean

The “golden mean” is a central theme in Aristotle’s moral and political thought. In many activities and pursuits, we achieve excellence when we find the mean between extremes of excess and deficiency. Courage, for example, is the moral virtue concerned with our feelings of confidence in

² Aristotle, *Nicomachean Ethics*, Second Edition (Kindle Edition), translated and annotated by Terence Irwin (Indianapolis: Hackett Publishing Company), p. 2.

the face of a threat. Courage is found in the mean between excessive feelings of confidence (the vice of foolhardiness) and deficient feelings of confidence (the vice of cowardice).

Aristotle doesn't say much about architecture. But the few comments he makes that have direct and indirect application to the design of our dwellings reflect his focus on finding excellence in the mean between extremes. First, with respect to the organizational plan for houses in a city, Aristotle says:

"Where private dwellings are concerned, the modern Hippodamean scheme of laying them out in straight rows is considered pleasanter and more useful for general purposes. But when it comes to security in wartime, the opposite plan, which prevailed in ancient times, is thought to be better. For it makes it difficult for foreign troops to enter and for attackers to find their way around. Hence the best city-state should share features of both plans. This is possible if the houses are laid out like vine "clumps," that is if certain parts and areas are laid out in straight rows, but not the city-state as a whole. In this way, both safety and beauty will be well served." (1330b25).

Notice here that Aristotle is concerned with both form and function. For the purposes of aesthetics, he regards straight rows as superior. For better defense, irregular arrangements make it difficult for invaders to succeed. The mean between an extreme concern with aesthetics and an extreme concern with specific function is the "vine clump" plan. This moderate path will best achieve excellence in city planning.

Aristotle's focus on the mean also has relevance for the design of individual homes, at least by implication. In describing the design of the city, he says, "...it should be large enough to enable the inhabitants to live a life of leisure in a way that is generous and at the same time temperate." (*Politics*, 1326b30). Aristotle's overall aim is to describe a happy city where the citizens live flourishing lives together. Flourishing citizens, in turn, are citizens who live excellently; living excellently, in turn, is a matter of performing activities that reveal their specific excellences or virtues. It would be consistent with Aristotle's approach, I think, to extend his remark to the

context of the dwelling. Homes should be big enough to enable citizens to be leisured (that is, capable of pursuing the liberal arts and the social virtues) but not so big as to encourage ostentatiousness and wastefulness.

It will be worthwhile for us to develop this line of reasoning a bit further. One reason that big houses and estates are a problem is that they reveal vices of excess. When a citizen opts for a big house or estate, they spend too much of their wealth on themselves and not enough on the common or public good. At the same time, they demonstrate excessive interest in satisfying their individual pleasures. In Aristotle's view, a flourishing city is a joint project of its citizens. Those citizens who are wealthy have weightier ethical obligations to support this joint project. If they don't—for example, if they spend their wealth on their estates and luxury goods—then they aren't good citizens. We might note further that when citizens build big houses and estates, they incur the expenses that it requires to manage them. The bigger the house, the more time and resources that are required to maintain it. The more time and resources that a homeowner uses to support her estate, the less time she has to make use of her estate for the real ends that the estate is supposed to enable: relationships in the household and work in the community.

In other words, happiness will not be found in a life preoccupied with maintaining one's estate. Such a life would be similar to the hypochondriac or the germaphobe: people who've made an end out of something that should rightfully be regarded merely as a means to an end. Dwellings for Aristotle are the tools of their occupants, not the purposes of life for the occupants. The homeowner who does nothing with his life but work on his home is missing out on the human good. Interesting, just as dwellings are not the ultimate ends of their occupants, nor are dwellings the ultimate ends of their designers. Dwellings are designed and built in order to enable their occupants to freely pursue the good. In this way, an architect is a good architect if she designs and builds dwellings that accomplish these aims. She contributes to the common good of the city. But the architect who designs homes in which no one lives is like the librarian who would prefer that patrons stay away from the books or the greens keeper who hates golfers.

Finally, it's not just the size of the house that has an effect on the extent of our freedom. The design of the house can also have an effect. Aside from the studies that show that our environment

can affect our mood and productivity, we know from our own experience that the nature and quality of our surroundings can profoundly affect the vitality of the talking, living, and working that we do in them. Together with an excellent architect and builder, we believe that we could construct for our household a space that could maximize the capabilities of our household, and thereby greatly increase the quality and range of possibilities through which we could achieve an excellent (and thereby happy) life in community.

1.4 Aristotle and Dwelling

Let us now synthesize the themes that we've developed above. First, consider the dwelling. At bottom, dwellings are tools: they are spaces designed to enable us to flourish in terms of the virtues in the context of our relationships, our work, and our leisure. At the same time, the design of the dwelling must reflect the circumstances of our household and its responsibilities with respect to the city more broadly. A good house increases the freedom of its occupants to pursue the good life in community. But like all of our tools, we prefer those that do more than answer to our functional needs—we prefer those that answer to our functional needs in a way that we find aesthetically pleasing.

Next, consider the architect. We do not assume that every homeowner will be a master of design and construction. In the excellent city there will be division of labor. Some citizens will be excellent at design and construction; the flourishing life is one in which they are free in the city to design and construct dwellings (etc.) that enable households and, in turn, the city to flourish. Given what we've said above, the design and construction process must be a partnership. The architect brings expertise and experience to bear, while the occupants bring the specific elements of their own particular households together with specific aesthetic preferences and an account of the particular goods and pursuits attached to their household. The ultimate aim of the partnership is to produce a dwelling that conforms to the description above.

Finally, we must qualify this account by noting that, as human beings, there is no one perfect designed space in which we will be enabled to flourish for our entire life. At different stages in our

life, we will have different functional requirements, together (perhaps) with evolving aesthetic tastes. So either our dwellings must be flexible or our city must offer a range of choices. Both of these options involve the risk of limitations to our freedom.

2. Problems with Contemporary Architecture

How does this ideal match up with our current realities? We should note first that this entire vision is *available* to the wealthiest members of contemporary society. Architects and builders exist who could, in partnership with homeowners, design and build dwellings that reflect and enable freedom in Aristotle's sense. I frame this first claim counterfactually, however, because in most cases those homeowners who can afford Aristotelian freedom fail to achieve it. They build without regard to the common and public good of the community, seeking instead to isolate themselves in enclaves of with other wealthy people. They also build large, wasteful, ostentatious homes that enable vice and inhibit virtue. At the same time, the socioeconomic realities of contemporary markets act as disincentives to architects and builders to partner with middle and lower classes in pursuit of Aristotelian freedom.

Outside of the wealthy, the vast majority of us selects from and lives in dwellings that neither are the product of genuine Aristotelian freedom nor enable wide-ranging Aristotelian freedom. In the first, place, most of us have little freedom to make significant alterations to our dwellings because we do not own them. Even in the United States, the ownership rate is now below 40%. In the second place, even when we have some choice among possible houses or apartments, it is nearly all one form or another of mass housing. Mass housing is, by definition, designed without contact (and therefore input) by those who will live in it. To be sure: designers of mass housing are constrained by the market—the market requires that they produce units that people will choose to live in. But since they must cater to a wide range of people, they must produce designs that aren't suited too narrowly. What this means is bland architecture and sparse ornamentation.

This problem could be overcome if our building methods for mass housing permitted greater flexibility for configuration and reconfiguration. Unfortunately, our contemporary designs and

building methods permit very little change on a macro level. Occupants can add furnishings, detailing, and color to a unit, but they have little opportunity to create or adapt the main spaces to better match the distinctive aesthetic and functional characteristics of their particular household. Macro level aesthetic and functional characteristics—the ways in which the beauty function of the unit as a whole might be tailored to match the household—is inaccessible without great cost. The freedom of occupants is significantly constrained.

It is no better for the architects and builders of mass housing than it is for the occupants. In addition to having no direct connection to the eventual occupants of the dwellings they design and construct, they are rarely permitted to add furnishings, ornamentation, color, and other details to their products. In other words, they aren't really permitted to finish designing and building a dwelling. Market forces require them to build homes that are incomplete. Note that the problem here is not merely that of not seeing a design scheme through to its full realization. It is instead the bigger problem that the architect is not permitted to design a fully realized dwelling. Since she does not know the occupant, even a fully designed but not fully built structure would fail to satisfy the needs of a mass housing market that requires broad appeal. In this way, the architect too is constrained in her freedom to fully realize her expertise in service of the good of the community. We might also note that the occupant, deprived of the experience and expertise of the architect, must employ whatever amateur abilities she has in order to complete the design. The inevitable result is a generic home design with amateur finishings. Our freedoms are not enhanced.

3. Features of a Solution

It is possible that the problems I suggest above all reduce to problems of economic class. Even in a flourishing capitalist economy with redistributive policies that create a broad and flourishing middle class, it might be that Aristotelian freedom and flexibility in homeownership is available only to the wealthiest members of society. I tend to be an optimist myself and believe that creative thinking, sound government policy, and motivated entrepreneurship could make more progress toward the Aristotelian ideal. It seems to me that we can identify the central elements of a response to the

problems I suggest above as well as some technologies that we might leverage in service of these elements. There is not space here to fully develop these ideas; this sketch should instead be viewed as a conversation starter.

3.1. Elements of Progress

Given the attractiveness of the Aristotelian ideal and the trouble that we face in our current state of architecture and construction, it seems clear that at least the following improvements need to be made.

1. Flexibility. We must design and build homes that can be more easily configured and reconfigured to fit the conditions that enable distinct households to flourish at various stages of their development.
2. Complete Design. We must enable households to make use of the full range of design talent of architects and builders. Real partnerships between designers and households will increase the freedom of both parties to achieve their goods.
3. Cost. We must find a way to reduce the costs associated with flexibility and complete design in order to open Aristotelian freedom to wider and wider ranges of our populations. Mass building and assembly line production decreased costs and thus enabled the wider availability of products in the 20th century.

3.2 How Do We Do It?

It seems to me that we can best accomplish these aims if we pursue two related changes to the way we design and build homes currently. First, we need to build less of the dwelling on site. Since all onsite construction is custom construction, we reduce costs when we build less on site. Second, we need to increase the degree of finishing that we complete offsite. Let me briefly sketch the model that I'm suggesting here.

First, the basic structure of our dwellings needs to be more flexible so that they can be better adapted to fit the requirements of different households in different stages. This means that our structures need to be capable of much more macro level adjustment than we presently allow. Commercial construction with its reliance on steel, cement block and structural concrete is more flexible in this way than wood-based dwellings that require more internal support. One first step toward the kind of Aristotelian flexibility that interests us here would be to explore the possibilities of permanent and stable, affordable steel and concrete scaffolding for our housing units. Our aim would be to build this part of the dwelling onsite. With a good engineering partnership, the additional elements of the unit—assembled offsite—would be easy to secure or re-secure to the scaffolding.

Second, we need to enable households and architects to pursue finished dwellings with a greater degree of customization as befits the requirements of the household. Recent developments in mass construction in the United States (and elsewhere) suggest a possible pathway here. In the United States, for example, a number of developers have begun to build portions of their houses in factories. They then ship these parts to the worksite by flatbed truck for final assembly. This strategy reduces weather delays and leverages the precision, robotically-based tooling that is available only in a factory. These innovations can be carried further and in a more Aristotelian direction. In addition to using these faculties for the structural elements of housing, we could also employ these factories for the finishing details of the house. In fact, we might be able to achieve new efficiencies by adding the finishing details to the structural elements of the unit before we ship it the site.

An approach like this also has advantage for the pre-existing homes and units form the range of choices among dwelling units for most households. If the underlying structure of the unit is simpler in the way I suggest here, it will be simpler for the occupant, together with a designer, to reconfigure the space to better match requirements of the household. The parts that form the basis of this reconfiguration need not be constructed from scratch. Provided that we develop the shared standards for engineering the basic structure, entrepreneurs could develop interchangeable and transferable architectural and finishing elements. In this way, a household might be able to

configure or reconfigure some of the essential features of its dwelling, but at a much lower cost than we find today. At the same time, architects would have opportunities to design a more complete home.

Again, all I can do here is gesture in the direction of the kinds of changes to architectural and building practices that might better accomplish the Aristotelian vision. If we find this vision compelling, it will be up to us to convince the industry to help us think through its realization.

Acknowledgement

The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the US Air Force, the US Department of Defense, or the US government.

References

Aristotle, *Politics*. Translated with an introduction and notes by C.D.C. Reeve. Indianapolis, IN: Hackett Publishing Company, 1998.

Aristotle, *Nicomachean Ethics*, Second Edition (Kindle Edition). Translated and annotated by Terrence Irwin. Indianapolis, IN: Hackett Publishing Company, 2011.